TWX and Interlibrary Loans*

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ABSTRACT

Libraries now have available to them a variety of ways of speeding the flow of information among widely scattered locations. One of the means for the improvement of interlibrary loan service is the use of the teletypewriter, and the use of Teletypewriter Exchange Service (TWX) by medical libraries during the past three years is described. The background of library applications of teletypewriter systems is outlined, and the advantages, types of use, cost factors, and experiences of some groups are discussed, as well as the impact of the "network concept" on library service.

ON September 2, 1965, the medical librarians of Duke University, Bowman Gray School of Medicine, and the University of North Carolina met to seek ways of broadening the base of medical library collections and services in the three institutions. The question of communications methods was raised early in the discussions, and a decision was made to investigate various possibilities of speeding up the transmission of procedural information among libraries. It was immediately evident that any degree of sophistication in communications would be more attractive with more participating libraries, and the medical libraries of the University of Virginia and the Medical College of Virginia were invited to join the group. Representatives of the common-carrier communications companies were contacted later that month, and formal proposals for several systems were prepared. TWX, or Teletypewriter Exchange Service, on the national dial network, was chosen after careful study showed the following advantages:

(1) As many libraries as wished to join the system could do so by simply installing TWX equipment, and the service was readily available in all parts of the country.

(2) There were already several libraries using TWX service.

(3) The equipment was simple and straightforward in operation.

(4) It was not necessary to have an operator in attendance in order to receive a message.

(5) A written record, or even a multiple-copy written record, was made available at both the transmitting and receiving stations.

(6) Message costs were reasonable, and each station would be billed individually for the calls it originated. Collect messages could also be handled with operator assistance.

TWX was installed at Duke on January 11, 1966, and at Chapel Hill and Bowman Gray shortly thereafter. The Medical College of Virginia was already a participating member of the state-wide Virginia Libraries network, and the University of Virginia School of Medicine installed their TWX late in the spring. The Universities of Kentucky and Louisville became affiliated with the group, and each installed equipment at its medical library, effectively completing a three-state medical library network upon which to build. Soon after, the National Library of Medicine joined us, agreeing to accept interlibrary loan requests via TWX in their efforts to improve their increasingly overloaded loan service. As of November 1968, there were seventy-two medical libraries on the TWX network.

It must be remembered that TWX was installed by these libraries as a tool, primarily an adjunct to their interlibrary loan service. Realizing that TWX communication increases only the communication speed, and not the loans themselves, we undertook to accelerate the handling of interlibrary loan requests within the library and to streamline the provision of material by using photocopy, first-class mail, and by

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providing prompt reporting of exceptions when an item is not held. In addition to this means of enhancement of interlibrary loan service, the libraries also found themselves with an advanced communications medium available for almost unlimited applications.

The Teletypewriter Exchange Service network is very similar to our Long Distance Dial Telephone System. A teletypewriter is a machine much like an electric typewriter, which may be connected by ordinary telephone wires, through a dial exchange, to any other teletypewriter in the system. When two stations are connected, any message typed on the keyboard of one machine appears printed out, not only at the sending station, but also at the receiving station. If the receiving, or called, station wishes to respond, it is only necessary for the operator to type on the keyboard, and the message again appears on both machines. Most machines are equipped with a paper-tape punching and sending unit, which permits the operator to prepare a coded punched paper tape when typing on the machine, before actually dialing another station. While punching the tape, typing may be done carefully and slowly if desired, and corrections are easily made. When the tape is completely and correctly prepared, it may be sent automatically by the machine to the called station, thereby permitting full utilization of the 100-word-per-minute speed of the teletypewriter, and ensuring accuracy of the transmission. The message paper normally used is a continuous roll and consists of two sheets with an interleaving carbon sheet, providing two copies of the message at both the sending and receiving station. The arrangement of the keyboard is like that of a standard typewriter, and there are only a few additional controls to be mastered. A good typist can be instructed in the use of the equipment very quickly.

Teletypewriters have been in use for a long time. Western Union has used them for the transmission of telegrams, and the news services transmit to radio and television stations and newspapers via various teletypewriter services; also the military and industry have long been active users. The medium has been in use in libraries in this country since 1927, with most of the early installations found in public library systems. TELEX, as the service is known in Europe, has been used quite extensively by continental libraries, with some 700 installations noted in 1966 (1). At that time there were 120 libraries in the United States using TWX; this number has since tripled. Some installations have been private-line systems connecting a few nearby institutions or connecting several locations within a single library. Several installations are parts of networks of libraries, more or less formally structured. Many of these are TWX-linked, such as those in the states of Indiana, Texas, Virginia, Pennsylvania, Utah, Vermont, and New York; and some are closed-circuit systems, with a central point being used for access to the TWX network, as in Connecticut, Rhode Island, Maryland, and Oklahoma. The literature relating to reports of TWX operations has recently been reviewed by Herbert Poole (2) and Brigitte Kenney (3). An extensive bibliography has been maintained by the Systems Division of the Duke University Medical Center Library, covering the literature on use of TWX by all types of libraries, and we have been in correspondence with most of the groups making, or planning, new teletypewriter installations. The Library also publishes, in cooperation with the Library Mechanization Committee of the Canadian Library Association, a directory of all libraries in the United States and Canada known to be using exchange service telecommunications. The *Library Telecommunications Directory: Canada—United States* is computer produced and updated, and a new edition is prepared every few months, with supplementary pages distributed as needed (4).

As with any means of communication, the need for standards rapidly became obvious. Many libraries in the past which had used teletypewriter systems found themselves either with no control of any sort over message format and transmission techniques, or severely hampered with complex coding systems and extensive abbreviations. We felt that there must be some systematization provided, but that plain language text should be the form of choice within the body of any message. The ALA Interlibrary Loan Code had long ago made provision for standardized forms for interlibrary loan. Formats were developed for TWX use which made it possible to record all of the essential information normally included on the ALA form, and it was found that the data could be arranged on the page in such a way

that the finished message could be used interchangeably with the old form—even to the point of having the name and address of the requesting library in a location properly aligned for use in window envelopes or photocopy mailers. The use of two-part paper provides the requisite four copies, as prescribed by the ALA Code, of a request, all generated at the location desired. In order to formalize these points, a procedures manual, *Teletypewriter Exchange System for Interlibrary Communications* (5), was designed by the group from operating experience in such a way that the other libraries using TWX could adopt it, usually without altering their own internal procedures. It specifies standards for message conventions, permissible abbreviations, operating procedures, rationale and instructions for formats, sample messages, and other applicable information. In addition, the Interlibrary Loan Policy Statement of the five libraries was included, indicating the how, when, and why of our request handling. The manual has been revised three times, and several hundred copies are now in circulation.

In addition to interlibrary loan requests, the system provides a good medium for searching, or polling, several libraries for a given item and permits rapid responses and exception reporting to requests. Unusual or difficult reference questions and cataloging problems may be referred to the appropriate expert at another library. Information notes on new serials acquisitions may be exchanged, providing an efficient updating system to previously published journal lists. Assuming that the vendors with whom a library deals also have TWX service, rush orders and tracers on past orders may also be handled. For the traveling librarian, transportation and accommodation reservation service via TWX is rapid, positive, and almost universally available. National Union Catalog search requests are usually answered within twenty-four hours. In fact, any general interlibrary correspondence is capable of transmission via TWX. In all of these applications, the combination of speed and a positive written record of the message at both stations, thus insuring accuracy and minimum misunderstanding in interpretation, is very effective.

Of the advantages offered by the use of TWX, the most obvious is the rapid speed of communication. Added to this, and perhaps more important to libraries, are the opportunities for better readers' service and public relations, increased library cooperation and use of local resources, and the general increase in communications efficiency. We have experienced definite improvement in all interlibrary communications with the advent of TWX. Especially in the processing of interlibrary loans, TWX, together with a conscious effort to streamline the provision of loans, has enabled us to give and receive much better service. In the instance of a search for a given item, the old expected delays of several weeks have been cut to a few days at the most—and a few hours at best—since negative reports are transmitted within twenty-four hours. We have found a distinct advantage over the telephone: the provision of a written record, eliminating misunderstanding when dealing with foreign languages, exotic medical terms, and complex citations; and the possibility of receipt of a message even if no one is in attendance at the receiving end. Costs have been quite reasonable (Table 1), even discounting the fact that it is difficult, if not impossible, to put a price tag on the savings in time, or on the goodwill engendered by improved service. Reactions of operating personnel have been excellent. Interlibrary loan clerks find, and report, that "cutting a tape" is no more difficult than typing a standard ALA form, and some even prefer to initiate TWX requests than to use the old forms.

TABLE 1

COMPARATIVE MESSAGE COSTS: JANUARY–JUNE, 1968

LIBRARY	NUMBER OF MESSAGES	AVERAGE COST PER MESSAGE
KYU-M	292	$1.76
KYLU-M	301	$1.92
NCBG	364	$1.32
NCU-H	438	$1.25
NCD-M	608	$1.01
VIU-M	626	$ .90

Six of the medical libraries of the North Carolina–Virginia–Kentucky group were asked to submit figures on their interlibrary loan traffic. The study (6) shows the quantitative shifts in the areas supplying loan material to a

TABLE 2

NUMBER OF LOANS RECEIVED: SIX-MONTH SAMPLE PERIODS

BORROWING LIBRARY	LENDING LIBRARY																						
	1965 (No TWX)								1966 (TWX)								1968 (TWX)						
	VIU-M	NCBG	NCD-M	NCU-H	KYLU-M	KYU-M	VIR-M	DNLM	VIU-M	NCBG	NCD-M	NCU-H	KYLU-M	KYU-M	VIR-M	DNLM	VIU-M	NCBG	NCD-M	NCU-H	KYLU-M	KYU-M	DNLM
KYU-M			5		19	x		48	6	4	30	13	29	x	1	38	1	1	5	12	29	x	23
KYLU-M	1	4	4	3	x	66		56	4	3	15	6	x	52		61	1	1	13	4	x	29	56
NCU-H	4	6	75	x			1	80	9	26	149	x	6	6	11	93	30	78	147	x		11	24
NCD-M		10	x	90	4	17	7	65	6	7	x	82	5	10	5	32	3	29	x	103	3	5	71
NCBG		x	49	5				98	18	x	55	65	13	11	10	55	28	x	79	56			73
VIU-M	x		5	2			20	211	x	3	26	19		11	14	90	x	70	42	44	2	2	139
Total lent by each	5	20	138	100	23	83	28	558	43	43	275	185	53	90	41	369	63	179	286	219	34	47	386
Total	955								1099								1214						

given library and indicates the increased speed in filling requests. The geographical pattern of the libraries lending to members of the group shifted away from the predominance of the National Library of Medicine and resulted in increased use of locally available resources. Table 2 shows the number of loans obtained by the six reporting libraries from all others in the group and from NLM, for three six-month periods in 1965 (without TWX), 1966, and 1968. In 1965, 58 percent of the loans to the group was supplied by NLM; in 1966 and 1968, while TWX was being used, this percentage dropped to 34 and 32, respectively. These figures also reflect a substantial increase in the number of loans obtained from within the group. The average time required to obtain materials from another library in the group decreased from eight days to three and one-half days; the latter figure has remained essentially constant since the fall of 1966. Negative reports were generally received within the agreed-upon twenty-four hours.

Future uses of the system are still to be fully exploited. The possibility of remote inquiry of computer-stored information for journal location, with automatic switching and initiation of interlibrary loan requests according to the dictates of the stored listings, will probably become feasible. Work on similar systems is already in progress. The use of TWX as a remote computer terminal is already a reality, and access to several time-sharing installations affords the opportunity for experimenting with computer-oriented projects. Since the TWX system is not dedicated, that is, it is not a privately leased and controlled system, expansion is quite simple, and more important, the system exists in the here and now. While the use of an electronic medium for message transmission hardly represents the ultimate sophistication of computer-controlled switching networks, library use of TWX has afforded an opportunity to utilize a readily available medium in the alleviation of communication problems. At the same time, experience can be gained immediately with such a system, and insights can be gained into the solution of more far-reaching problems in biomedical communications.

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